

WHAT IS CLAIMED IS:

1. A signal level detector comprising:

a first voltage/current conversion circuit which  
outputs a first current which depends on a voltage  
5 amplitude of an inputted signal;

a second voltage/current conversion circuit which  
outputs a second current which depends on an inputted  
reference voltage signal; and

a comparison circuit which compares the first  
10 current with the second current and outputs an output  
current based on a comparison result.

2. The signal level detector according to  
claim 1, wherein the inputted signal is a differential  
signal, and the reference voltage signal includes two  
15 reference voltages.

3. The signal level detector according to  
claim 1, wherein the first voltage/current conversion  
circuit outputs the first current which depends on a  
square of a voltage amplitude of the inputted signal,  
20 and the second voltage/current conversion circuit  
outputs the second current which depends on a square of  
an amplitude of the inputted reference voltage signal.

4. The signal level detector according to  
claim 1, further comprising a first capacitance element  
25 and a second capacitance element respectively connected  
between an output terminal of the first voltage/current  
conversion circuit and a ground potential and between

an output terminal of the second voltage/current conversion circuit and the ground potential.

5           5. The signal level detector according to claim 1, further comprising a first resistance element and a second resistance element, respectively connected between an output terminal of the first voltage/current conversion circuit and a ground potential and between an output terminal of the second voltage/current conversion circuit and the ground potential.

10           6. The signal level detector according to claim 1, wherein an output terminal of the first voltage/current conversion circuit and an output terminal of the second voltage/current conversion circuit are directly connected to each other and form  
15 one output end.

          7. The signal level detector according to claim 6, wherein the first current is a charging current which flows out from the output terminal, and the second current is a discharging current which flows  
20 into the output terminal.

          8. The signal level detector according to claim 6, wherein the first current is a discharging current which flows into the output terminal, and the second current is a charging current which flows out  
25 from the output terminal.

          9. A signal level detector comprising:  
a first squaring circuit to which a first voltage

signal is inputted and which outputs a first current including a square component of an input amplitude of the first voltage signal;

5 a second squaring circuit to which a reference voltage signal is inputted and which outputs a second current including a square component of an amplitude of the reference voltage signal; and

10 a comparison circuit which compares a first output voltage which is in proportion to the first current with a second output voltage which is in proportion to the second current, and outputs a control signal used to detect the first voltage signal based on a comparison result.

15 10. The signal level detector according to claim 9, wherein the first voltage signal is a differential signal, and the reference voltage signal includes two reference voltages.

20 11. The signal level detector according to claim 9, further comprising a first capacitance element and a second capacitance element respectively connected between an output terminal of the first squaring circuit and a ground potential and between an output terminal of the second squaring circuit and the ground potential.

25 12. The signal level detector according to claim 9, further comprising a first resistance element and a second resistance element respectively connected

between an output terminal of the first squaring circuit and a ground potential and an output terminal of the second squaring circuit and the ground potential.

5           13. The signal level detector according to claim 9, wherein an output terminal of the first squaring circuit and an output terminal of the second squaring circuit are directly connected with each other and form one output end.

10           14. The signal level detector according to claim 13, wherein the first current is a charging current which flows out from the output terminal, and the second current is a discharging current which flows into the output terminal.

15           15. The signal level detector according to claim 13, wherein the first current is a discharging current which flows into the output terminal, and the second current is a charging current which flows out from the output terminal.

20           16. An amplification factor control system comprising:

            a signal level detector which includes a first voltage/current conversion circuit which outputs a first current which depends on a voltage amplitude of  
25           an inputted signal, a second voltage/current conversion circuit which outputs a second current which depends on an inputted reference voltage signal, and a comparison

circuit which compares the first current with the second current and outputs a control signal based on a comparison result; and

an amplification circuit to which the control  
5 signal of the signal level detector is inputted, and  
which outputs an output signal obtained by amplifying  
an inputted reception signal with an amplification  
factor according to the control signal and determines  
the output signal as the detection signal which is  
10 inputted to the signal level detector.

17. The amplification factor control system  
according to claim 16, wherein the first voltage/  
current conversion circuit outputs the first current  
which depends on a square of a voltage amplitude of  
15 the inputted signal, and the second voltage/current  
conversion circuit outputs the second current which  
depends on a square of an amplitude of the inputted  
reference voltage signal.

18. The amplification factor control system  
20 according to claim 16, wherein the control signal has a  
third voltage when the output signal from the amplifi-  
cation circuit is a first voltage having a first  
amplitude, and the control signal has a fourth voltage  
larger than the third voltage when the output signal  
25 from the amplification circuit is a second voltage  
having a second amplitude larger than the first  
amplitude.

19. The amplification factor control system according to claim 16, wherein the control signal has a third voltage when the output signal from the amplification circuit is a first voltage having a first  
5 amplitude, and the control signal has a fourth voltage smaller than the third voltage when the output signal from the amplification circuit is a second voltage having a second amplitude larger than the first amplitude.

10 20. The amplification factor control system according to claim 16, further comprising a capacitance element connected between a terminal to which the control signal is applied and a ground potential.